REMARKS/ARGUMENTS

Favorable consideration of this application is respectfully requested.

Claims 1, 18-26, and 28-42 are pending. No claims are amended or canceled. Thus, no new subject matter is added.

The Office Action rejected all of the pending claims under 35 U.S.C. § 102(b) over Boire (U.S. 6,045,896). Claim 28 was further rejected in the alternative as unpatentable under 35 U.S.C. § 103 over Boire. Applicants respectfully traverse these rejections.

The presently pending independent claims recite a very specific structure. In particular, where a sacrificial layer is present above the upper functional layer in the accused structure, it is present above the absorbent layer and not directly in contact with the functional layer. In addition, an absorbent layer is present below the first functional layer. Applicants submit that this combination of features is conjunction with the rest of the claimed subject matter is not disclosed or suggested by Boire.

The Office Action cites various sections of Boire and asserted that every element of claim 1 is disclosed by Boire. With respect to the absorbent layer above the second functional (silver) layer in Boire, the Office Action at page 2 states that "each functional layer can also have a metal layer such as Nb above the functional layer (Table 1). In fact, however, the Nb layer of Table 1 is not an absorbent metal layer in the completed stack, but is a sacrificial layer. Indeed, Boire expressly calls the Nb layer a sacrificial layer and recognizes that it is not an absorbent layer. Col. 9, lines 49-51 ("A thin at least partially oxidized metallic 'sacrificial' layer 4, 7 is deposited on each of the functional layers 3, 6"). Thus, although Nb metal may be deposited, upon subsequent deposition of an oxide layer as in Examples 1 to 3, the metal layer becomes oxidized and is sacrificed. Similarly, the Ti layer above the second silver layer in Boire Examples 4 and 5 is sacrificed after deposition of the subsequent ZnO layer.

The Office Action at page 3 also asserts that Boire discloses at least one absorbent layer under the first functional layer, citing page 3, lines 1-5 and col. 5, lines 40-60. In fact, however, Boire provides no reason to place an absorbent layer under the first silver layer and teaches that the absorbent layer should be above the silver layers.

Boire is concerned with preserving the optical quality of an optical stack placed on a substrate and then heat treated. Col. 3, lines 8-11. Boire reports that optical quality degrades due to migration of material from functional layers. Col. 3, lines 26-33. Boire further states:

> Thus, when the functional layer is made of silver, the migration of silver both in the form of Ag and Ag^+ into the *upper layers, i.e. those placed on top of it*, was observed, this migration resulting in the formation of silver "clusters" on the surface of the stack, creating an unattractive speckling.

Col. 3, lines 3, lines 33-38; emphasis added. Similarly, Boire explains:

> From the chemical standpoint, if this time the adjacent layers, and more particularly the layers placed on *top* of it, are not capable of completely blocking this migration, the optical defects mentioned above then appear. This may be the case when there are, as dielectric coatings placed on *top* of the functional layer, known materials of the metal-oxide type, or even materials chosen for forming an oxygen barrier so as to prevent the migration of oxygen from the outside into the functional layer, as is the case with Si_3N_4.
>
> The invention therefore consisted in providing a double protection for the functional layer of the silver type.
>
> It was important to continue to provide on top of the functional layer at least one layer made of a material capable of preventing the migration of oxygen and water from the ambient atmosphere into the functional layer, this diffusion rising from the atmosphere proving to be of greater magnitude and markedly more prejudicial to the integrity of the functional layer than the possible migration of oxygen which stemmed this time from the glass. (However, provision may also be made, for maximum safety, also to place this type of "barrier" layer under the functional layer). This thus avoids any chemical modification of the functional layer, in particular by oxidation/hydration, which would decrease its thermal performance characteristics and would call into question its optical quality, this chemical degradation phenomenon being uncontrollable.
>
> However, the invention adds to this first protection, according to a first variant, a means for capturing, and absorbing the silver which would tend to migrate out of the layer, this being achieved with the aid of a layer capable of receiving a certain amount of constituent material of the functional layer

> which is "in excess" under the thermomechanical stress. This so-called "absorbent" layer thus makes it possible to stop the migration into the other layers of the stack *as far as the external atmosphere*.

Col. 3, line 57 to col. 4, line 24; emphasis added. Thus, Boire is repeatedly concerned with migration of silver into the layers above the silver layer and optical defects caused by this migration, especially to the surface of the coating stack.[1]

Although Boire also theoretically states that the absorbent layer can be in direct contact with the functional layer, Boire's teachings generally include a sacrificial layer as well. When a sacrificial layer is present, it is between the functional layer and the absorptive layer, rather than the other way round. See, e.g., col. 5, lines 50-58 and Examples 1-5. In no case does Boire suggest a coating stack having a sacrificial layer above both the second functional layer and an intervening absorptive layer as recited in the present independent claims.

While Boire also includes general statements that an absorbent layer or a stabilizing layer can be above or below a functional layer, it provides no reason to place an absorbent layer below the functional layer as in the claimed coating stack. Instead, Boire discloses and provides a reason to provide a "stabilizing" layer below the silver layers. However, the stabilizing layers are disclosed as particularly being ZnO, and not one of the presently claimed absorbent metal layers. Col. 4, lines 54-63. Thus, Fig. 1 and examples 1-5 all have a ZnO layer 2b underneath the first silver layer together with other dielectric layers (see, col. 9, lines 52-54; col. 10, lines 38-41; Col. 11 - Table 1; col. 12 - Table 3; col. 13 - Table 5) and not an absorbent layer as recited in the present claims.[2]

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[1] Applicants note that dependent claims 18 and 21 in the present application also together require at least one functional layer to contain silver.

[2] Table 5 includes a structure with a very thin (1 nm) film of Ti below the Ag layer. This film is not an absorbent layer and in any event is at a minimum excluded by the thicknesses of the first absorbent layer recited in dependent claims 36 and 41.

In addition, it would not have been obvious to modify the coatings of Boire et al. to achieve the low visible light transmission (effectively about 60% or less - 35% absorbed as recited in the claims and a minimum of about 5% reflectance can be expected) using the claimed structure. Although Boire et al. discusses the use of "absorbent" layers of various compositions, Boire et al. does not use "absorbent" in the same sense as the claims in the present application where absorption refers to the absorption of visible light (LA). See specification page 1, line 20. Instead, Boire et al. is concerned with absorption of migrating silver atoms during heating of the glass. Col. 4, lines, 16-24. Thus, Boire et al. addresses a different problem than the presently claimed inventions and provides no reason to modify the disclosed compositions to achieve the structures recited in independent claims 1 and 38.

Accordingly, Boire et al. does not disclose or suggest the features of independent claims 1 and 38. It is submitted that independent claims 1 and 38, and dependent claims 18-26, 28-37, and 39- 42 which depend on claims 1 and 38, are in condition for allowance.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the application is believed to be in condition for allowance. Therefore, a Notice of Allowance for claims 1, 18-26, and 28-42 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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